

# USATHAMA

U.S. Army Toxic and Hazardous Materials Agency

## Enhanced Preliminary Assessment Report:

### Westport Army Housing Units Westport, Connecticut



October 1989

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prepared for

Commander  
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## SUMMARY

The Westport military housing facility located in Westport, Conn., presents no imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property. No immediate remedial actions, therefore, are warranted for the site.

Although these housing units were originally developed in conjunction with a Nike missile battery, available documentation and circumstantial evidence indicate that the housing property was wholly independent of the battery's operational activities. No Nike-related wastes were delivered to this property for management or disposal. Furthermore, since this property was independent of the Nike missile operations with respect to all necessary utilities, there is no possibility of migration of Nike-related wastes along buried utility lines. Nevertheless, two potential environmental impacts from this property have been identified and should ultimately be addressed.

One environmental concern involves the putatively substandard waste-disposal systems that service each housing unit. The property could ultimately adversely affect the environment if these on-site subsurface sewage systems remain in service without being brought up to State of Connecticut waste-disposal standards, especially in light of the inadequate surface-water drainage on the property. A second concern involves the above-ground fuel-oil storage tanks. The exteriors of the new above-ground tanks appear not to have an adequate protective coating, and areas of rust were observed on some of them. An adverse environmental impact can be anticipated should these tanks remain in service in their present condition. Adding to this concern is the possibility that the effectiveness of the concrete containment box beneath each tank would be compromised if the drainage tap on the box were to remain in the open position for an extended period of time.

The following actions are recommended prior to the release of this property:

- Bring the waste-disposal systems up to state standards.
- Assure the integrity of the above-ground fuel-oil storage tanks, treat for rust, and apply a proper protective coat.
- Develop and implement a solution to the possibility of containment-box drainage taps being inadvertently left in the open position.

The above recommendations are based on the assumption that this property will continue to be used for residential housing.

## 1 INTRODUCTION

In October 1988, Congress passed the Defense Authorization Amendments and Base Closure and Realignment Act, Public Law 100-526. This legislation provided the framework for making decisions about military base closures and realignments. The overall objective of the legislation is to close and realign bases so as to maximize savings without impairing the Army's overall military mission. In December 1988, the Defense Secretary's ad hoc Commission on Base Realignment and Closure issued its final report nominating candidate installations. The Commission's recommendations, subsequently approved by Congress, affect 111 Army installations, of which 81 are to be closed. Among the affected installations are 53 military housing areas, including the Westport housing area addressed in this preliminary assessment.<sup>1</sup>

Legislative directives require that all base closures and realignments be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA). As a result, NEPA documentation is being prepared for all properties scheduled to be closed or realigned. The newly formed Base Closure Division of the U.S. Army Toxic and Hazardous Materials Agency is responsible for supervising the preliminary assessment effort for all affected properties. These USATHAMA assessments will subsequently be incorporated into the NEPA documentation being prepared for the properties.

This document is a report of the enhanced preliminary assessment (PA) conducted by Argonne National Laboratory (ANL) at the Army stand-alone housing area in Westport, Conn.

### 1.1 AUTHORITY FOR THE PA

The USATHAMA has engaged ANL to support the Base Closure Program by assessing the environmental quality of the installations proposed for closure or realignment. Preliminary assessments are being conducted under the authority of the Defense Department's Installation Restoration Program (IRP); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 91-510, also known as Superfund; the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499; and the Defense Authorization Amendments and Base Closure and Realignment Act of 1988, Public Law 100-526.

In conducting preliminary assessments, ANL has followed the methodologies and procedures outlined in Phase I of the IRP. Consequently, this PA addresses all documented or suspected incidents of actual or potential release of hazardous or toxic constituents to the environment.

In addition, this PA is "enhanced" to cover topics not normally addressed in a Phase I preliminary assessment. Specifically, this assessment considers and evaluates the following topical areas and issues:

- Status with respect to regulatory compliance,
- Asbestos,
- Polychlorinated biphenyls (PCBs),
- Radon hazards (to be assessed and reported on independently),
- Underground storage tanks,
- Current or potential restraints on facility utilization,
- Environmental issues requiring resolution,
- Health-risk perspectives associated with residential land use, and
- Other environmental concerns that might present impediments to the expeditious "excessing," or transfer and/or release, of federally owned property.

## 1.2 OBJECTIVES

This enhanced PA is based on existing information from Army housing records of initial property acquisition, initial construction, and major renovations and remodeling performed by local contractors or by the Army Corps of Engineers. The PA effort does not include the generation of new data. The objectives of the PA include:

- identifying and characterizing all environmentally significant operations (ESOs),
- Identifying property areas or ESOs that may require a site investigation,
- Identifying ESOs or areas of environmental contamination that may require immediate remedial action,
- Identifying other actions that may be necessary to address and resolve all identified environmental problems, and
- Identifying other environmental concerns that may present impediments to the expeditious transfer of this property.

### 1.3 PROCEDURES

Connecticut military housing records located at Fort Devens, Mass., were reviewed during the week of May 15-19, 1989. Additional information was obtained on July 17, 1989, from the Family Housing Office located at the Navy and Marine Corps Reserve Center, New Haven, Conn., and from an interview on July 20, 1989 with the Area Facilities Engineer at his office in Windsor Locks, Conn. A site visit was conducted at Westport, Conn., on July 18, 1989, at which time additional information was obtained through personal observations of ANL investigators and discussions with the site's senior occupant. Photographs were taken of the housing units and surrounding properties as a means of documenting the condition of the housing units and immediate land uses. Site photographs are appended.

All available information was evaluated with respect to actual or potential releases to air, soil, and surface and ground waters.

Access to individual housing units was obtained through the senior occupant at the facility. In addition, ANL revisited the property on September 5, 1989, at which time the interiors of all the units were inspected.



## 2 PROPERTY CHARACTERIZATION

### 2.1 GENERAL PROPERTY INFORMATION

The Westport housing property, 5.62 acres in area, is located in the town of Westport in Fairfield County in southwestern Connecticut.<sup>2</sup> Figures 1 and 2 show the general location of the facility.

The housing units were developed in 1958, and were recently renovated.<sup>3,4</sup> No additional major construction has taken place on the property since it was developed.

### 2.2 DESCRIPTION OF FACILITY

Figure 3 shows the site plan of the housing property.

#### Housing Units

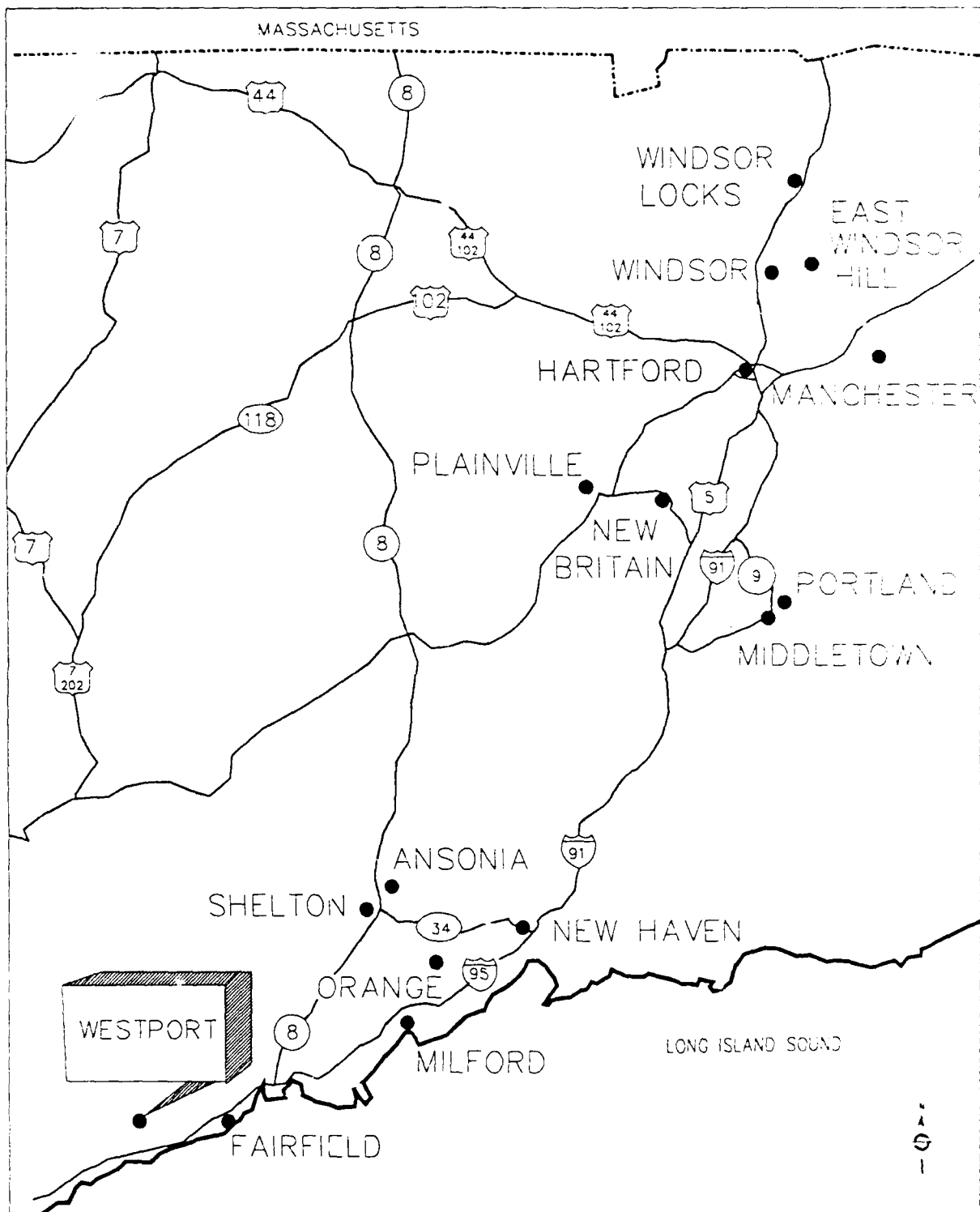
The Westport military housing facility comprises 16 wood-frame, one-story, 3-bedroom, single-family houses built on concrete slabs. Capehart is the model name assigned to these houses by the builder, National Homes. Five of the units have garages attached.<sup>4,5</sup>

#### Utilities

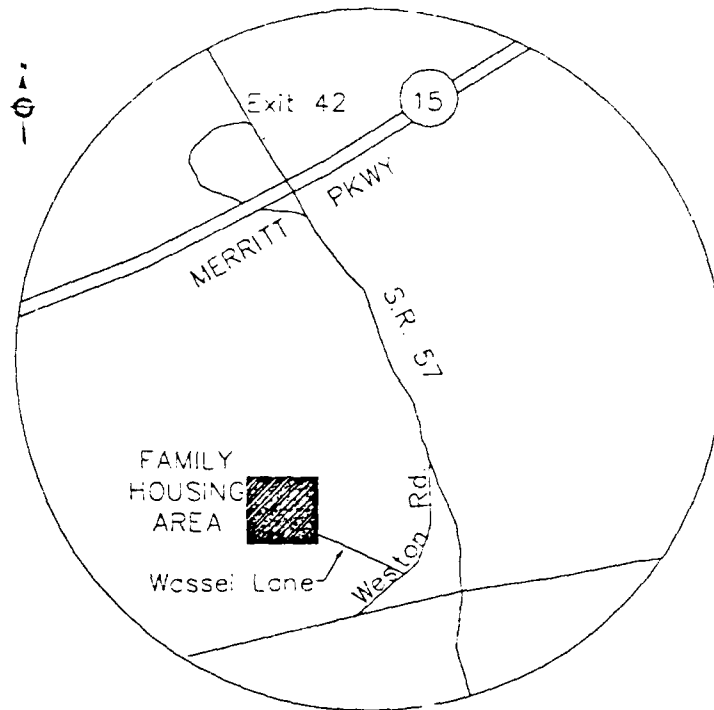
Since development of the property, the housing units have been connected to the town water department's distribution system, and no drinking water wells exist on the property. Likewise, the electrical distribution system for the property is connected to the local power company's distribution system. However, according to the Area Facilities Engineer, all water and electrical lines, utility poles, and electrical transformers on the property are owned by the U.S. government, which is responsible for maintaining them. Therefore, the cost of repairs made to the property's utility distribution systems by public utility personnel is borne by the government. There is no documentation of the transformers being tested for the presence of PCBs. However, there is no evidence of spills or leaks from the transformers. Solid wastes are removed from the property by a private contractor.

#### Sewage

Each of the 16 housing units has its own subsurface sewage disposal system, consisting of a 750-gallon septic tank, a concrete distribution box, and either an open-joint disposal trench (11 units) or twin leaching pits (5 units).<sup>4</sup>



**FIGURE 1 Location Map of Connecticut Army Housing Facilities**



**FIGURE 2 Vicinity Map of Westport Army Housing Units**

### **Fuel Storage**

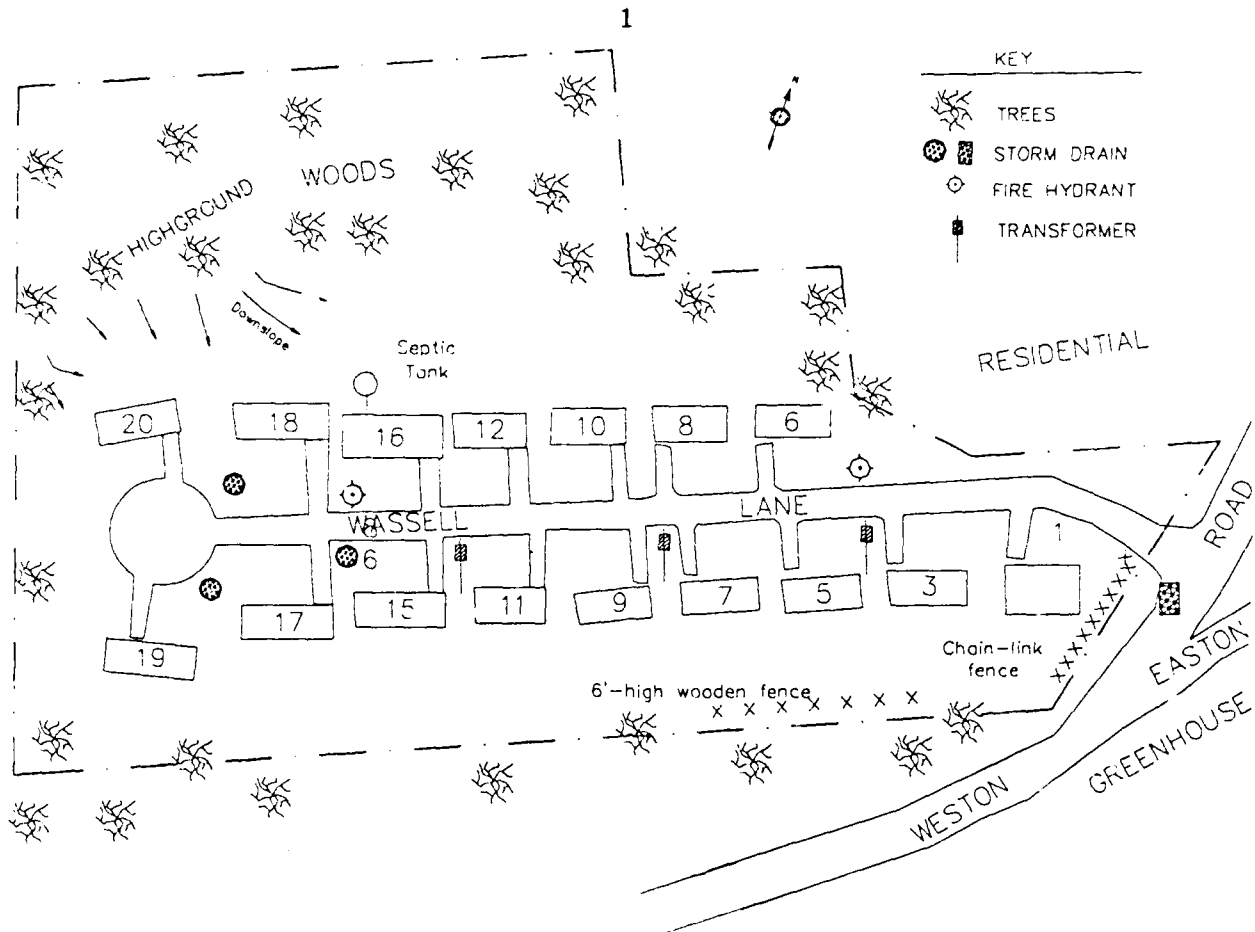
Each unit has an above-ground, 275-gallon, fuel-oil storage tank located in the rear of the unit. Concrete containment boxes underlie the recently-installed tanks. The containment boxes are at ground level above the old original underground storage tanks. The underground tanks were drained of oil, filled with sand or fine gravel, and left in place. This tank replacement was contracted through the New York District Army Corps of Engineers approximately two years ago. No leaks of petroleum products are known or suspected from the original underground tanks. Their replacement was a matter of good engineering practice, dictated by their advancing ages.

### **Storm Drainage Systems**

The property is drained by surface runoff into a 12-inch storm drain through three catch basins located near the western end of Wassell Lane, or into a 15-inch storm drain through another catch basin located east of the property on Weston Road at the southwest corner of Wassell Lane.<sup>4</sup>

### **Other Permanent Structures or Property Improvements**

Other than recent renovations to the housing units, there are no other permanent structures or property improvements.



**FIGURE 3 Site Plan Map of Westport Army Housing Units**

## 2.3 PROPERTY HISTORY

### 2.3.1 Nike Defense Program and Typical Battery-Level Practices

Generic information on the national Nike antiaircraft defense program has been compiled in two studies, one commissioned by the Army Corps of Engineers<sup>6</sup> and the other by the U.S. Army Toxic and Hazardous Materials Agency.<sup>7</sup> In both studies, independent contractors relied on information contained in unclassified documents related to the Nike surface-to-air missile program, including engineering drawings and specifications (for the facilities and the missiles themselves), interviews with Army personnel participating in the Nike program, and operations manuals and directives relating to the operations and maintenance of Nike facilities. Taken together, these two reports represent the most complete assemblage of generic information on the Nike missile program from an environmental perspective. Salient points from both reports are condensed below.

At its zenith in the early 1960s, the Nike program included 291 batteries located throughout the continental United States. The program was completely phased out by 1976, with many of the properties sold to private concerns or excessed to state or local governments for nominal fees.

Nike Ajax missiles were first deployed in 1954 at installations throughout the continental United States, replacing, or in some cases augmenting, conventional artillery batteries and providing protection from aerial attack for strategic resources and population centers. Typically, Nike batteries were located in rural areas encircling the protected area. The Ajax was a two-stage missile using a solid-fuel booster rocket and a liquid-fuel sustainer motor to deliver a warhead to airborne targets.

The Ajax missile was gradually replaced by the Nike Hercules missile, introduced in 1958. Like the Ajax, the Hercules was a two-stage missile, but it differed from the Ajax in that its second stage was a solid-fuel rather than liquid-fuel power source and its payload often was a nuclear rather than conventional warhead. Ajax-to-Hercules conversions occurred between 1958 and 1961 and required little change in existing Nike battery facilities. A third-generation missile, the Zeus, was phased out during development and consequently was never deployed.

A typical Nike missile battery consisted of two distinct and separate operating units, the launch operations and the integrated fire control (IFC) operations. The two operating areas were separated by distances of less than two miles, with lines of sight between them for communications purposes. A third separate area was also sometimes part of the battery. This area was typically equidistant from the two battery operating sites and contained housing for married personnel assigned to the battery. Occasionally, these housing areas also contained battalion headquarters, which were responsible for a number of Nike batteries.

Depending on area characteristics and convenience, the housing areas were often reliant on the launch or IFC sites for utilities such as potable water, electrical power, and sewage treatment. In those instances, buried utility lines connected the housing area to one or both of the other battery properties. It is also possible, however, that housing areas were completely independent of the missile launcher and tracking operations. In those instances, the necessary utilities were either maintained on the housing site or purchased from the local community. In many localities, as the character of the land area around the housing units changed from rural to suburban or urban, communities extended utility services to the housing unit locations, in which case conversions from independent systems to community systems were made.

A large variety of wastes was associated with the operation and maintenance of Nike missile batteries. Normally encountered wastes included benzene, carbon tetrachloride, chromium and lead (contained in paints and protective coatings), petroleum hydrocarbons, perchloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and trichloroethylene. Because of the rural locations of these batteries, and also because very few regulatory controls existed at that time, most of these wastes were managed "on-site." (Unused rocket propellants and explosives, however, would always have been returned to central supply depots and not disposed of on-site.) It is further conceivable that wastes generated at one of the Nike properties may have been transferred to its companion property for management or disposal.

Wastes related to missile operation and maintenance would not have been purposely transferred from a battery operating area to a housing area with no facilities for waste management or disposal. In some instances, however, the sewage treatment facilities for all Nike battery properties were located at the housing area; that possibility cannot be automatically ignored. Finally, where housing areas received various utilities from either of the operating areas, it is also possible that wastes disposed of on those other properties may have migrated to the housing area via the buried utility lines. And since decommissioning of the Nike batteries did not normally involve removal of buried utility or communication lines, any such contaminant migration is likely to have gone unnoticed.

### **2.3.2 Westport Housing Units**

The Westport housing area was developed in 1958 as a stand-alone housing facility for military personnel assigned to the Nike missile battery located in Westport. The housing facility was completely independent of the battery's launch and fire control operations with respect to water, sewer, and electrical utilities. Sixteen single-family houses were erected on the property. Each unit has always been serviced by its own subsurface sewage-disposal system. Each unit is supplied with a 15-gallon in-ground garbage container located in the rear of the unit. These containers are no longer in use.

Since the initial property development in 1958, no other permanent structures have been added, and none of the original structures has been razed. However, renovations include the installation of smoke and heat detectors in each unit in 1979. More recently, new vinyl siding was installed over the original cedar shakes, in addition to new roofs, gutters, and downspouts, and new above-ground fuel-storage tanks to replace the original underground tanks. In 1988, new heating systems, new windows, and new kitchens and bathrooms were installed. Plans for removal of the in-ground garbage containers were in the design stage in 1989.

## **2.4 ENVIRONMENTAL SETTING AND SURROUNDING LAND USE**

The residential town of Westport, in which the 5.62-acre housing property is located, is situated on the northern shore of Long Island Sound. The northwest portion of the housing property lies in a wooded area. Private residential areas surround the remainder of the property. The town of Westport has an estimated 1986 population of 25,000.<sup>8</sup>

## **2.5 GEOLOGIC AND HYDROLOGIC SETTINGS**

Westport is located in the Saugatuck River Basin of the New England Upland section of the New England Physiographic Province. The Saugatuck River Basin is located in southwestern Connecticut. This 26-mile-long river flows from Ridgefield to Westport and has a drainage area of 93.2 square miles ( $\text{mi}^2$ ). Water-supply reservoirs that receive drainage from 51.4  $\text{mi}^2$  are used by a private company to supply 320,000 people in 8 towns -- almost 50% of the population of southwestern Connecticut. A long-term declining trend in average annual daily discharge caused by interbasin water

demands is observed; presently 60% of stream flow is used for water supply. Water shortages are frequent in southwestern Connecticut because of distribution problems and the relatively small size of its reservoirs, except in the Saugatuck River Basin. Other companies, however, purchase water from the same water supplier during drought periods and impose additional demands on their supply by way of an interconnected pipe system. There is no flood control in this basin and floods could still occur, such as the one on October 16, 1955, where the peak flow in the Saugatuck River was 14,800 cubic feet per second or 9,570 million gallons per day.

Stratified drift is the only aquifer capable of large sustained yields of water to individual wells. Till is widespread and generally provides only small amounts of water. Wells in till normally yield only a few hundred gallons of water daily and commonly are inadequate during dry periods. Till is generally used only as an emergency or secondary source of water.

Bedrock aquifers underlie the entire Saugatuck River Basin and include sedimentary, igneous, and metamorphic rock types. These aquifers supply small but reliable quantities of water to wells throughout the basin and are the chief source for many nonurban homes and farms. About 90% of the wells tapping bedrock yield at least 2 gallons per minute, and much larger yields are occasionally reported.

The quality of water upstream from the Saugatuck Reservoir is excellent and is presently used for public supply. The water quality of the Saugatuck River downstream from Saugatuck Reservoir is considered by the Connecticut Department of Environmental Protection (DEP) to be suitable for drinking water.<sup>9</sup> The water is generally low in dissolved solids and is soft to moderately hard. Surface water is less mineralized than groundwater, especially during high flow when it is primarily surface runoff. Iron and manganese occur in objectionable concentrations in parts of the area, particularly in water from streams draining swamps and in water from aquifers rich in iron- and manganese-bearing minerals.

Incidences of groundwater contamination detected by state and local agencies increased significantly over the last decade largely because of more comprehensive monitoring and analyses. Practices such as burial of fuel storage tanks and improper waste disposal, the prospect of continued urban growth, the potential for accidental spills of chemicals, the likely strengthening of state drinking-water standards, and the hydrogeologic characteristics of major aquifers suggest that groundwater contamination will continue to be a problem in Conn. Furthermore, groundwater and surface water are so interrelated in Conn. that their quality cannot be managed separately. Yields of large public-supply and industrial wells commonly depend on induced recharge from surface-water bodies. Conversely, groundwater under natural conditions discharges mainly to streams, lakes, and estuaries. State water-quality management efforts are focused on conjunctive management of groundwater and surface water within the framework of major river basins.<sup>10</sup>

### 3 ENVIRONMENTALLY SIGNIFICANT OPERATIONS

#### 3.1 SEPTIC SYSTEM PROBLEMS

According to the Area Facilities Engineer in Windsor Locks, the septic systems are no longer adequate to service the units. Furthermore, the groundwater table is high, lying just below the surface, and although the property is not in an identified floodplain, some of the backyard areas are subject to flooding in heavy rains, presumably contributing to or exacerbating the occasional waste disposal problems that have arisen. The septic systems are constructed too close to the water table and do not meet current State of Connecticut standards. In the past 12 to 18 months, unit #6 has experienced septic tank problems that have been temporarily corrected by a local contractor who pumps out the tank and disposes of the sewage off site.

In March 1989, raw sewage backed up into the bathtub and one of the sinks in unit #16. This occurred at the time that underground fuel storage tanks on the property were being abandoned in place and was attributed to a contractor having mistaken the septic tank's clean-out access for the fill pipe of the underground fuel-storage tank. The contractor allegedly had inadvertently poured sand into the septic tank instead of the underground fuel-storage tank at the time the fuel tank was being replaced by the new above-ground storage tank. The problem was corrected by having a local contractor clean out the septic tank. At the same time, the septic tank next door at unit #18 was also cleaned out to check that the mistake had not been repeated at that unit.

#### 3.2 FUEL-OIL STORAGE TANKS

A canopy affixed to the house a few feet above the above-ground 275-gallon fuel-storage tank located in the rear of each unit provides marginal protection from the elements for the above-ground fuel storage tanks. The tanks appear to have been coated with primer only and not to have been coated with an adequate protective finish. Frequently observed areas of rust on the fairly new tanks reinforce this perception. Moreover, a rupture and leakage of oil from a similar above-ground storage tank at another Conn. military housing facility has been reported.<sup>8</sup> Therefore, continued use of these tanks in their present condition may entail a significant environmental risk.

Potential risk to health might also attach to the collection of rainwater in the storage-tank containment box if the water is allowed to stagnate. On the other hand, if the occupant of a housing unit opens the containment-box drainage tap to release rainwater but forgets to close it, the effectiveness of the box in containing an oil leak would be compromised should a tank rupture occur.

There was no evidence of underground fuel-storage tank leakage at the Westport facility, and decommissioning of the tanks appears to have been done in an acceptable manner.



### 3.3 ASBESTOS-CONTAINING MATERIALS

The Area Facilities Engineer stated that asbestos insulation generally is present on water pipes in the utility rooms of the units. However, inspection of the utility room of one of the housing units during the site visit revealed that no such insulation was present in that particular unit. Floor tiles used in original construction also may contain asbestos. Floor tiles were all found to be in good condition.

#### 4 KNOWN AND SUSPECTED RELEASES

There have been no known major releases or impacts to the environment at the Westport housing facility. No hazardous wastes or hazardous materials are stored on-site. The septic system problem experienced by unit #6 entailed a health risk to the occupants, but the problem apparently is being controlled by periodic pumping of the septic tank by a local contractor. The releases of biodegradable human wastes would not have a long-term impact with respect to soil contamination, but, since the property has such a high water table, contamination of groundwater could pose an immediate health hazard.

## 5 PRELIMINARY ASSESSMENT CONCLUSIONS

Although these housing units were originally developed in support of a Nike missile battery located in Westport, no wastes associated with the operation or maintenance of the battery were delivered to or managed at this property. Furthermore, the housing facility was completely independent of the battery's launch and fire control operations with respect to water, sewer, and electrical utilities. No documentary evidence was found of utility connections between the housing site and the other battery properties.

Despite its independence from Nike battery operations, this property could adversely affect the environment if the on-site waste disposal systems were to remain in service without the modifications required to meet State of Connecticut standards, especially in light of the problems with surface-water drainage on the property.

The Area Facilities Engineer stated that asbestos insulation generally is present on water-heater pipes in the utility rooms of the housing units. However, one of the units inspected did not have such insulation. Vinyl asbestos floor tiles were used in the original construction of the housing units;<sup>5</sup> however, these tiles are in good condition.

Although the above-ground fuel-oil storage tanks are no more than two years old, adverse environmental impacts can be anticipated if the tanks are allowed to remain in service in their present condition. It should be recognized also that the concrete containment box that underlies each storage tank would be rendered ineffective if the drainage tap of the box were to remain open for an extended period of time.

There have been no reports of leakage of oil from the old underground fuel-storage tanks while they were in service.

## 6 RECOMMENDATIONS

The Westport housing facility presents no imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property. No immediate remedial actions, therefore, are warranted for the site. Nevertheless, two potential environmental impacts from this property have been identified which should be addressed.

The 16 putatively substandard waste-disposal systems, together with inadequate surface water runoff and drainage, represent a continuing potential for environmental impact and a possible impediment to the expeditious excessing of this property. It is therefore recommended that a determination be made of the adequacy of the waste-disposal systems and that necessary modifications be made.

A second potential environmental impact derives from the continued use of the inadequately protected above-ground fuel-oil storage tanks and their associated concrete containment boxes. The integrity of these relatively new storage tanks should be confirmed, and following treatment for existing rust, protective coatings should be applied to the exteriors of the tanks. With respect to containment-box drainage taps, some method should be devised to ensure that they do not remain in the open position for extended periods of time.

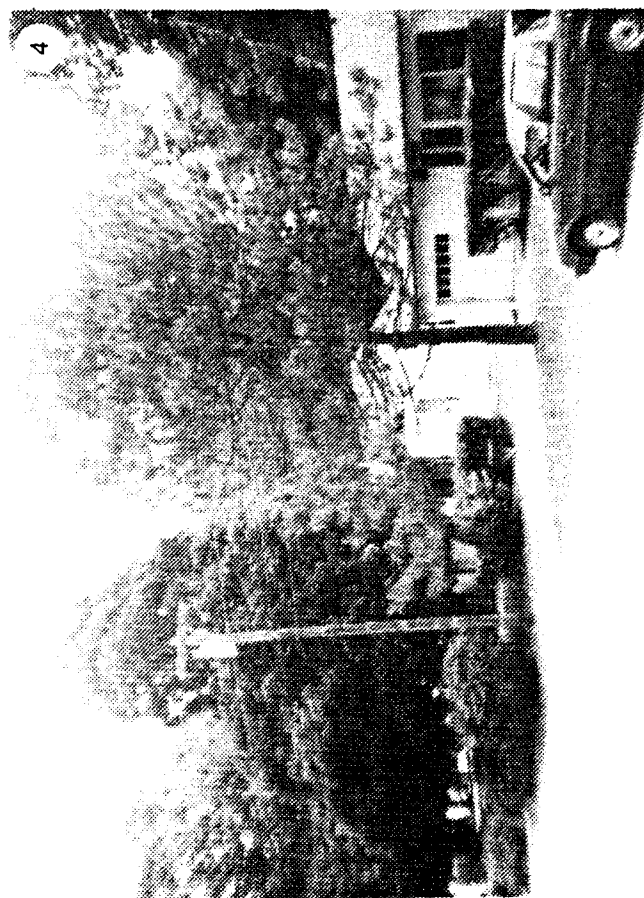
These recommendations assume that this property will most likely continue to be used for residential housing.

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**APPENDIX:**  
**PHOTOGRAPHS OF WESTPORT HOUSING FACILITY**  
**AND SURROUNDING LAND**









## IDENTIFICATIONS OF PHOTOGRAPHS

1. A view westward along Wassell Lane; note the broken cap on the water-gate pipe stem in front of the fire hydrant; housing unit #6 is in the foreground.
2. Housing unit #18, one of five units with an attached garage.
3. One of the 11 units without an attached garage.
4. An electrical transformer atop a utility pole; the three transformers on site are maintained and repaired by the federal government.